

again request formal acknowledgement of Applicants' claim for domestic priority under 35 U.S.C. §120.

Responsive to the objection to the specification, Applicants have amended the specification. The amendment to the specification is in concert with what is shown in the figures and recited in some of the claims. The amendment to the specification does not add any new matter. Accordingly, Applicants submit that the specification is now in allowable form.

Responsive to the rejection of claims 1-3, 7-10 and 13 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,283,393 (Guginsky) in view of U.S. Patent No. 5,780,771 (Beckwith et al.), Applicants respectfully traverse the rejection, and submit that claims 1-3, 7-10 and 13 are in condition for allowance.

Guginsky discloses an armored flexible electrical conduit with fittings (Figs. 1 and 2) including a flexible hermetically tight metal conduit 11, a conduit connector female compression fitting 12 and a male tubular coupling 13. Fitting 12 and coupling 13 are coupled to conduit 11 in a hermetically sealed relationship. Fittings 12 and/or coupling 13 are also used to provide a conduit connection to an electrical junction box (column 2, lines 47-59). Female compression fitting 12 is provided with gland nut 27 which compresses a gland or gasket encircling a conduit inserted into female compression fitting 12 thereby clamping conduit 11 and effecting a hermetically tight coupling (column 3, lines 33-38). Insulation covered multiple conductor cable 29 traverses the length of conduit 11, fittings 12 and couplings 13 (column 3, lines 61-65).

Beckwith et al. disclose a hermetically sealed housing having a flex tape electrical connector (Fig. 3) including sealed housing assembly 10 having a hermetically sealed housing member 12 and a flex tape electrical connector device 14. Hermetically sealed housing member

GRD0122.CIP

12 has a top cover element 16 and a bottom cover element 18. Top and bottom cover elements 16 and 18 are hermetically sealed together at a lap joint interconnect 20 by welding or an epoxy based adhesive 22 (column 2, lines 48-55). Flex tape electrical connector device 14 transmits electrical signals between electrical equipment 25 in the interior region 24 and electrical components 33 in the region exterior to housing member 12. Plug connectors 36 and 38 at the ends of flex tape electrical connector device 14 are non-hermetically sealed plug connectors (column 3, lines 16-27). Signal conductor 34 extends through opening 30 and is coupled between electrical equipment 25 and electrical components 33 (column 3, lines 39-41). A joining mechanism 50 secures signal conductor 34 of connector device 14 to exterior wall 23 at opening 30. Joining mechanism 50 hermetically seals signal conductor 34 to housing member 12 to define hermetically sealed housing assembly 10. Joining mechanism 50 includes filler element 52 and sealant 54. Sealant 54 hermetically seals signal conductor 34 to U-shaped member 56 and hermetically seals U-shaped member 56 to an edge wall 32 of opening 30 (column 4, lines 9-37).

In contrast claim 1, as previously amended, recites in part, "an electrical component ... solely hermetically sealing said tubing end." (Emphasis added) Applicants submit that such an invention is neither taught, disclosed nor suggested by Guginsky, Beckwith et al. or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Guginsky discloses the use of fittings 12 and couplings 13 to hermetically seal conduit 11 to another conduit 11 or an electrical junction box through which conductor cable 29 traverses. Beckwith et al. disclose a hermetically sealed housing having an electrical cable extending therefrom which is sealed by the co-acting of filler element 52 and sealant 54. However, neither Guginsky nor Beckwith et al. teach or suggest an electrical component solely hermetically sealing

GRD0122.CIP

a tubing end, as recited in part in claim 1. Contrary to the declaration by the Examiner that the flexible tubing of Guginsky can be combined with a “solely hermetically sealant” of Beckwith et al. to result in the present invention; Beckwith et al. teaches the need for a filler element 52 in combination with sealant 54 to hermetically seal the housing of Beckwith et al. As such, Beckwith et al. does not teach a solely hermetically sealant. Further, Beckwith et al. does not even refer to a tubing end.

The hermetic sealing of an end of a tubing assembly, as in the Applicants' invention, is distinct from hermetically sealing a conduit to another conduit or a junction box, such as taught by Guginsky. Guginsky teaches electrical conductors being routed through conduit 11 after the hermetic seal is established. However, Applicants' invention solely hermetically seals the end of the tubing, thereby not allowing the routing of conductors after the seal is in place. Therein lies an advantage of Applicants' invention, that being a hermetic seal to an end of a tubing assembly, which provides environmental protection when unattached to any other assembly. In contrast, the conduit of Guginsky would not be hermetically sealed if unattached to another structure such as a conduit or an electrical junction box. Beckwith et al. teaches the use of non-hermetically sealed connectors located apart from where the electrical flex device is sealed, by the co-action of a filler and a sealant, to the housing. Accordingly, Applicants submit that claim 1, and claims 2-3 and 7-9 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Additionally claim 7, recites in part, “said tubing including a non-smooth inner surface, said electrical component having an outer periphery which is in continuous intimate physical contact with said inner surface.” (Emphasis added) Applicants submit that such an invention is

GRD0122.CIP

neither taught, disclosed nor suggested by Guginsky, Beckwith et al. or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Guginsky discloses the use of fittings 12 and couplings 13 to hermetically seal conduit 11 to another conduit 11 or an electrical junction box through which conductor cable 29 traverses. Beckwith et al. disclose a hermetically sealed housing having an electrical cable extending therefrom, which is sealed by the co-acting of filler element 52 and sealant 54. However, Guginsky and/or Beckwith et al. do not teach or suggest a tubing including a non-smooth inner surface, the electrical component having an outer periphery which is in continuous intimate physical contact with the inner surface, as recited in part by claim 7. The Examiner refers to Fig. 2 of Guginsky stating that the electrical connector has an outer periphery which is in continuous intimate physical contact with the inner surface of the tubing. However, Fig. 2 does not indicate that the connector is in continuous intimate physical contact with conduit 11. Rather what is shown (referring additionally to Fig. 3) is a strap 26 compressed onto cylindrical wall 18, but not onto annular flange 19, therefore the connector is not in continuous intimate physical contact with the outer or the inner surface of the tubing. Further, peripheral strap 26 tightly encircles and radially compresses the outer end border of conduit 11 to strap 26 abutting a peripheral head formed on fitting 12 (column 3, lines 29-32). Hence in Guginsky it is the inner periphery of the connector which comes into contact with the outer surface of the conduit, which is contrary to what is claimed in claim 7, wherein a tubing including a non-smooth inner surface, the electrical component having an outer periphery which is in continuous intimate physical contact with the inner surface. Beckwith et al. has a sealant that coacts with a filler to seal around an outside surface of a flex circuit. Accordingly, Applicants submit that claim 7, and claim 8 depending

therefrom, are now in condition for allowance, which is hereby respectfully requested.

Additionally claim 10, as previously amended, recites in part, “an electrical connector ... solely hermetically sealing said tubing end.” (Emphasis added) Applicants submit that such an invention is neither taught, disclosed nor suggested by Guginsky, Beckwith et al. or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Guginsky discloses the use of fittings 12 and couplings 13 to hermetically seal conduit 11 to another conduit 11 or an electrical junction box through which conductor cable 29 traverses. Beckwith et al. disclose a hermetically sealed housing having an electrical cable extending therefrom which is sealed by the co-acting of filler element 52 and sealant 54. However neither Guginsky nor Beckwith et al. teach or suggest an electrical component solely hermetically sealing a tubing end, as recited in part in claim 10. Contrary to the declaration by the Examiner that the flexible tubing of Guginsky can be combined with a “solely hermetically sealant” of Beckwith et al. to result in the present invention; Beckwith et al. teaches the need for a filler element 52 in combination with sealant 54 to hermetically seal the housing of Beckwith et al. As such, Beckwith et al. does not teach a solely hermetically sealant. Further, Beckwith et al. does not even refer to a tubing end.

The hermetic sealing of an end of a tubing assembly, as in the Applicants’ invention, is distinct from hermetically sealing a conduit to another conduit or a junction box, such as taught by Guginsky. Guginsky teaches electrical conductors being routed through conduit 11 after the hermetic seal is established. However, Applicants’ invention solely hermetically seals the end of the tubing, thereby not allowing the routing of conductors after the seal is in place. Therein lies an advantage of Applicants’ invention, that being a hermetic seal to an end of a tubing assembly,

which provides environmental protection when unattached to any other assembly. In contrast, the conduit of Guginsky would not be hermetically sealed if unattached to another structure such as a conduit or an electrical junction box. Beckwith et al. teaches the use of non-hermetically sealed connectors located apart from where the electrical flex device is sealed, by the co-action of a filler and a sealant, to the housing. Accordingly, Applicants submit that claim 10, and claim 13 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Claims 4-6 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Guginsky in view of Beckwith et al. and in further view of U.S. Patent No. 4,701,574 (Shimirak et al.). However, claims 4-6 depend from claim 1, and claim 1 has been placed in condition for allowance for the reasons given above. Accordingly, Applicants submit that claims 4-6 are in condition for allowance, which is hereby respectfully requested.

Claims 11 and 12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Guginsky in view of Beckwith et al. and in further view of Shimirak et al. However, claims 11 and 12 depend from claim 10, and claim 10 has been placed in condition for allowance for the reasons given above. Accordingly, Applicants submit that claims 11 and 12 are in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 14-17 under 35 U.S.C. § 103(a) as being unpatentable over Guginsky in view of Shimirak et al. and Beckwith et al., Applicants respectfully traverse the rejection, and submit that claims 14-17 are in condition for allowance.

Guginsky and Beckwith et al. are described above.

Shimirak et al. disclose a cable sealing apparatus including a gel 16 made of a urethane, silicone or a non-silicone liquid rubber (column 3, lines 5-8). Gel 16 allows the passage of a

GRD0122.CIP

cable therethrough so that an end seal 12, 14, 60, 61, 62 and 65 can be formed for the cable when it passes through gel 16 (column 3, lines 23-29). End seals 12, 14, 60, 61, 62 and 65 do allow water to pass thereby (column 5, lines 35-40). Further, the figures illustrate cuts along the lengths of tubing 18.

In contrast claim 14, as amended, recites in part:

a plug solely hermetically sealing said tubing end, said at least one electrical conductor extending through and sealed with said plug.

(Emphasis added) Applicants submit that such an invention is neither taught, disclosed nor suggested by Guginsky, Shimirak et al., Beckwith et al. or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Guginsky discloses the use of fittings 12 and 13 to hermetically seal conduit 11 to another conduit 11 or an electrical junction box through which conductor cable 29 traverses. Shimirak et al. disclose a cable sealing apparatus including end seals 12, 14, 60, 61, 62 and 65 that allow water to pass thereby. Beckwith et al. disclose a hermetically sealed housing having an electrical cable extending therefrom which is sealed by the co-acting of filler element 52 and sealant 54. Shimirak et al. disclose a cable sealing apparatus including a gel 16 that allows the passage of a cable therethrough so that an end seal 12, 14, 60, 61, 62 and 65 can be formed for the cable when it passes through gel 16. End seals 12, 14, 60, 61, 62 and 65 allow water to pass thereby and the figures illustrate cuts along the lengths of tubing 18. However, Guginsky, Shimirak et al. and Beckwith et al. alone or in combination with any other cited reference fail to disclose, teach or suggest a plug solely hermetically sealing the tubing end, with at least one electrical conductor extending therethrough and sealed with the plug, as recited in part by claim 14. Contrary to the

Examiner's contention that Shimirak et al. teaches a plug hermetically sealing a tube, Shimirak et al. speaks of water migration within the tubing and shows splits along each tube illustrated. As such, the Examiner's contention that Shimirak et al teaches a plug that hermetically seals tubing is not supported by the disclosure.

Applicants' invention has certain advantages including solely hermetically sealing the end of a tubing, thereby not allowing the routing of conductors after the seal is in place. This arrangement environmentally protects the interior of the tube and the electrical elements therein when unattached to any other assembly. Accordingly, Applicants submit that claim 14, and claims 15-17 depending therefrom, are in condition for allowance, which is hereby respectfully requested.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,



Todd T. Taylor  
Registration No. 36,945

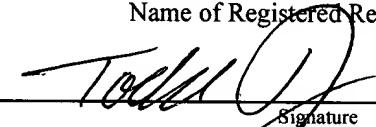
Attorney for Applicant

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Box Non-Fee Amendment, Commissioner for Patents, Washington, DC 20231, on: November 11, 2002

Todd T. Taylor, Reg. No. 36,945

Name of Registered Representative

  
Signature

November 11, 2002

Date

TTT6/aj

TAYLOR & AUST, P.C.  
142 S. Main Street  
P.O. Box 560  
Avilla, IN 46710  
Telephone: 260-897-3400  
Facsimile: 260-897-9300

Enc.: Return postcard



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ATTACHMENT A:  
MARKED-UP COPY SHOWING AMENDMENTS

IN THE SPECIFICATION

Please replace the paragraph that begins at page 5, line 18 of the specification with the following amended paragraph:

(Amended) Electrical component 16, in the embodiment shown, is in the form of an electrical connector having a plurality of electrical terminals 30, 32 and 34. Terminal 30 is electrically connected with line conductor 24; terminal 32 is electrically connected with neutral conductor 26; and terminal 34 is electrically connected with ground conductor 28, as indicated by the respective interconnecting phantom lines shown in Fig. 3. Electrical connector 16 is positioned at an end 36 of tubing 14, and hermetically seals tubing 14 at end 36. Electrical component 16 preferably solely hermetically seals end 40 of tubing 14. More particularly, electrical connector 16 includes an insert body 38, which is inserted into end 36 of tubing 14. End 36, with insert body 38 inserted therein, are then placed within a mold and plastic is injected into the mold to define connector 16 surrounding a portion of outer surface 20 as well as insert body 38. The outer periphery of insert body 38 is structured such that only a predetermined amount of plastic flows into the space between insert body 38 and inner surface 22 of tubing 14. As a result of the injection molding process, connector 16 has an outer periphery radially within inner surface 22, which is in continuous, intimate physical contact with inner surface 22. A snap-fit projection 39 may be inserted into an opening of a work piece (not shown) to allow connector 16 to be coupled with the work piece.

Please replace the paragraph that begins at page 6, line 9 of the specification with the following amended paragraph:

(Amended) Electrical component 18, in the embodiment shown, is in the form of a plug which hermetically seals end 40 of tubing 14. Electrical component 18 preferably solely hermetically seals end 40 of tubing 14. Electrical cable 12 extends through and is sealed with plug 18. To wit, plug 18 may be formed with a longitudinally extending cut out which frictionally engages cable 12, or may be formed directly around cable 12 using an insert molding process.